

**TWO NEW SPECIES OF BRACHYSCOME Cass. (COMPOSITAE:  
ASTEREAE), WITH A NOTE ON THE ORTHOGRAPHY OF THE  
GENERIC NAME**

by

P. S. SHORT\*

**ABSTRACT**

Short, P. S. Two new species of *Brachyscome* Cass. (Compositae: Astereae), with a note on the orthography of the generic name. *Muelleria* 6(6) : 389-398 (1988). — *Brachyscome formosa* sp. nov., from New South Wales, and *B. halophila* sp. nov., from Western Australia, are described. The orthography *Brachyscome*, not *Brachycome*, should be adopted as the latter does not comply with the requirements of the International Code of Botanical Nomenclature.

**GENERIC AND SUBGENERIC NOMENCLATURE**

The generic name *Brachyscome* Cass. (1816) was deliberately so spelled by Cassini and was used by him on three further occasions (Cassini 1817a,b) in *Dict. Sci. Nat.* In 1825 he considered his original spelling to be erroneous and changed it to *Brachycome*, noting that “C’est ainsi qu’il faut écrire ce nom générique au lieu de *Brachyscome*”, [it is thus that this generic name should be written, instead of *Brachyscome*]. Numerous authors subsequently adopted the spelling *Brachycome*, including Bentham (1867) and Davis (1948, 1949). The latter author was responsible for the latest revision of the genus. However it was recognized by Davis (1948) that the spelling *Brachyscome* did have priority. She commented that “to alter the terminology of the whole group by not accepting Cassini’s later correction would be pressing the law of priority to ridiculous lengths” (Davis 1948, p. 142). Soon after, a proposal to conserve the spelling *Brachycome* over *Brachyscome* was put forward to the Special Committee for Pteridophyta and Phanerogamae (Pichi-Sermolli, 1954). The vote for conservation of *Brachycome* was “In favour of conservation 1; Against conservation 3; Against (conservation unnecessary) 5; Abstention 1.” The vote for conservation was clearly lost but the question as to the preferred spelling of the name was not resolved. It seems that those who deemed it unnecessary to conserve the name felt that the whole question was one of orthography not conservation. Presumably they felt that the spelling *Brachycome* could be, perhaps should be, used. Those members of the committee who simply voted against conservation presumably did so because they felt that the original spelling should be retained. Opinion was clearly divided and soon after the original spelling began to find favour with some Australian botanists. Thus Eichler (1965, p. 297) stated that “There appears no reason to consider the original spelling *Brachyscome* as being orthographically or typographically wrong, and the alteration by Cassini to *Brachycome* thus seems to be not in accordance with Art. 73 of the International Code of Botanical Nomenclature (1961), according to which retention of the original spelling of a name is requested or, in any case, permissible”. Walker and Robinson (1979), Chapman (1980), Stace (1981), Elliot and Jones (1982), Barker (as editor of various papers in Barker and Greenslade 1982) and Stanley (1986) followed the example set by Eichler. Farr *et al.* (1979) also adopted the spelling *Brachyscome* in “Index Nominem Genericorum”.

Despite Eichler’s (l.c.) lead some botanists, e.g. Willis (1973) and Cooke (1985, 1986) have retained the spelling *Brachycome*. The spelling is also used in the first volume of the “Flora of Australia” (George 1981, p. 1) but with the comment that “it will sometimes be necessary to make arbitrary decisions on points of taxonomy and nomenclature, for example . . . the spelling of *Brachycome*”. Pro-

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\* National Herbarium of Victoria, Birdwood Avenue, South Yarra, Victoria, Australia 3141.

ponents of the spelling *Brachycome* presumably support it because it was Cassini, the author, who considered his original spelling to be erroneous. Baines (1981, p. 62) in his etymological dictionary of Australian plant genera also said that the "correct combining form for Gk brachys, short, is brachy-; followed by Gk kome, hair", and thus adopted Cassini's emendation. Botanists may have also favoured it because of its long usage. Such arguments can only hold if the name is conserved for, like Eichler (l.c.), I believe that the adoption of the spelling *Brachycome* is not in accordance with Article 73 of the International Code of Botanical Nomenclature (ICBN).

Article 73.1 of the ICBN (Voss, 1983) states that "the spelling of a name or epithet is to be retained, except for the correction of typographic or orthographic errors" and Article 73.3 states that "the liberty of correcting a name is to be used with reserve". Furthermore in Article 73.1, example 1, it is noted that the original spellings of the generic names *Mesembryanthemum* L. and *Amaranthus* L. are to be retained as they were "deliberately so spelled by Linnaeus". This is despite the fact that the spellings *Mesembrianthemum* and *Amarantus* are "philologically preferable". This agrees with the recommendations for the formation of new names today. Thus Recommendation 73 G.I states that "a compound name . . . which combines elements determined from two or more Greek or Latin words should be formed *as far as practicable*, in accordance with classical usage". Stearn (1983) has drawn attention to the names *Pachysandra* (not *Pachyandra*) and *Peliosanthes* (not *Pelianthes*), both of which are accepted despite being contrary to the ICBN recommendation that "in a true compound, a noun or adjective in a non-final position appears as a stem without case ending" (Recommendation 73 G.1a). As botanists we are presumably not meant to be masters of the classical languages, which is also reflected in the fact that generic names can be formed arbitrarily (Recommendation 75 A3).

Thus I believe that to be in accordance with the rulings of the ICBN the original spelling, *Brachyscome*, should be adopted.

Davis (1948) recognized two subgenera, namely '*Eubrachycome*' and '*Metabrachycome*'. The former contained species which possess anthers in which the connective is produced beyond the microsporangia to form a long terminal appendage. In '*Metabrachycome*' the anther connective is truncate. Of the two species described herein *B. formosa* is attributable to '*Eubrachycome*', *B. halophila* to '*Metabrachycome*'. Although the division of *Brachyscome* into two subgenera may be both natural and desirable Davis (l.c.) failed to provide a Latin description of '*Metabrachycome*' and neither it or the name '*Eubrachycome*' are validly published or established under the rules of the ICBN, a fact previously noted by Barker in Barker and Greenslade (1982).

## DESCRIPTIONS

### *Brachyscome formosa* P. S. Short, sp. nov.

*Herba perennis*, usque ad circa 15 cm altam, rhizomatosa, glabra, *Folia* caulina, alterna, praecipue viridia persaepe purpurascens; petiolus absens vel circa 3-25(31) mm longus, basi decurrenti; lamina plerumque circularis usque elliptica vel late obovata usque obovata, raro oblanceolata, 10-30 mm longa, (4.5)7-24 mm lata, lobis 3-7(11) interdum integris interdum 1- vel 2-dentatis. *Capitula* solitaria, terminalia, heterogama, radiata. *Involucrum* 5-8 mm diametro; bractae 14-26, imbricatae, ellipticae vel obovatae, 2.6-4.5 mm longae, 0.9-2 mm latae, herbaceae sed marginibus et apicibus scariosis. *Receptaculum* conicum, foevatum, glabrum. *Flosculi radii* feminei, 19-34; *corolla* 9.8-15.8 mm longa, 1.8-2.5 mm lata, rosea. *Flosculi disci* hermaphroditi, 40-83; *corolla* 2.5-3.6 mm longa, 0.7-1 mm diametro, flava; *antherae* 5, 1.05-1.45 mm longae, sporangii 0.8-1.2 mm longis, appendicibus terminalibus 0.2-0.4 mm longibus. *Cypselae* homomorphae, obovatae, planae, 2-3 mm longae, 0.9-1.4 mm latae, in quoque latu tuberculatae, alis angustis integris. *Pappus* annulus ciliatus, 0.15-0.2 mm longus.

**HOLOTYPE:** *Short 2425*, New South Wales. c. 3.5 km north west of Coonabarabran, along road to Baradine. 31° 14' S., 149° 14' E.. Open forest of *Eucalyptus*

(White Gum, Stringybark and Box). Sparse shrub understorey of epacrid shrubs and *Daviesia latifolia*. Very sandy loam. 3.x.1984 (MEL 1529338). ISOTYPE: AD, BRI, CANB, K, NSW.

*Perennial herb*, to c. 15 cm high, rhizomatous, glabrous. *Leaves* cauline, alternate, mainly green but often purple, particularly on the lower surface; petiole absent or c. 3-25(31) mm long, the base decurrent; lamina usually circular to elliptic or widely obovate to obovate, rarely oblanceolate, 10-30 mm long, (4.5)7-24 mm wide, with 3-7(11) lobes, the lobes sometimes 1 or 2 toothed. *Capitula* solitary, terminal, heterogamous, radiate. *Involucre* 5-8 mm diam.; bracts 14-26, overlapping, elliptic or obovate, 2.6-4.5 mm long, 0.9-2 mm wide, mainly herbaceous but with scarious margins. *Receptacle* conical, pitted, glabrous. *Ray florets* female, 19-34; corolla 9.8-15.8 mm long, 1.8-2.6 mm wide, pink. *Disc florets* bisexual, 40-83; corolla 2.5-3.6 mm long, 0.7-1 mm diam., yellow; stamens 5; anthers 1.05-1.45 mm long, microsporangia 0.8-1.2 mm long, apical appendages 0.2-0.4 mm long, base obtuse, endothelial tissue radial, filament collar straight in outline and composed of uniform cells and basally not thicker than the filament; pollen grains (2910)3000-



Fig. 1. Leaf variation in single plants of *B. formosa* (Short 2425) and *B. halophila* (Conn 2160). Basal and near basal leaves on left to uppermost cauline leaves on right. Scales = 1 cm.

5000(5250) per floret; style branches flattened, with deltoid, papillate tips, the stigmatic papillae marginal and not reaching the apex. *Fruits (cypselas)* homomorphic, obovate, flat, 2-3 mm long, 0.9-1.4 mm broad, conspicuously tuberculate on each face, with an entire, narrow wing. *Pappus* a ciliate ring, 0.15-0.2 mm long.

Figs 1, 2.

Chromosome number:  $n=9$  (*Short 2425*).

#### DISTRIBUTION:

All known areas are in New South Wales between c. 30°-33° S. latitude and c. 148°-150° E. longitude. Herbarium collections are from the vicinities of Coonabarabran, Gulgong, Mudgee and Grattai. The species also occurs in the Pilliga Scrub, having been introduced into the nursery trade from that region. I have also observed it at the base of Timor Rock and data supplied by Smith-White *et al.* (1970) suggest that it grows in the Warrumbungles National Park.

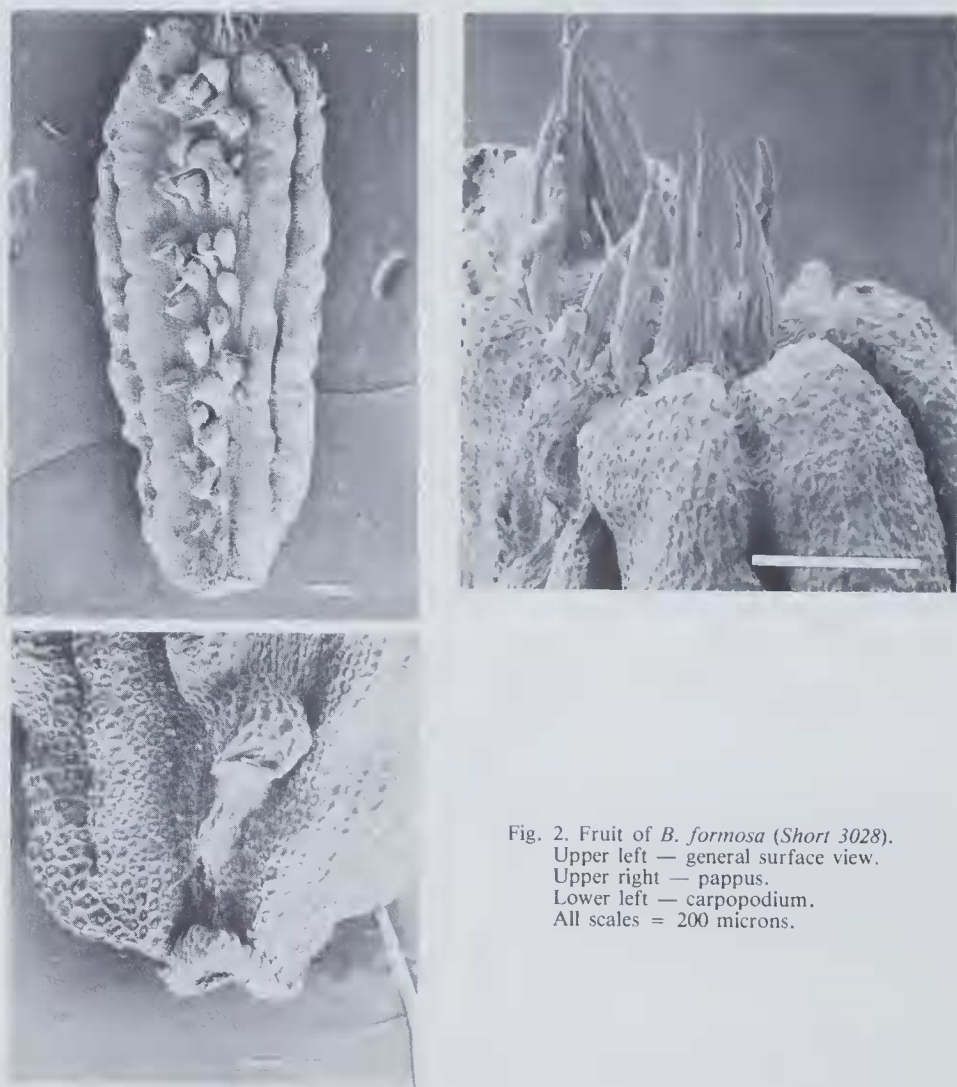


Fig. 2. Fruit of *B. formosa* (*Short 3028*).  
Upper left — general surface view.  
Upper right — pappus.  
Lower left — carpopodium.  
All scales = 200 microns.



# ECOLOGY:

As well as the ecological information cited for the type locality, collectors' notes include "in grass along roadside, under *Angophora intermedia*" and "on sandstone ridges".

# NOTES:

*B. formosa* has been recognized as a distinct taxon possibly requiring formal recognition, for a considerable time. It is evident from the label accompanying MEL 1553040, a collection gathered by Woolls and cited below, that Ferdinand Mueller felt that it was a distinct species and had considered naming it after Woolls. Davis, in 1947, determined a likely duplicate of the same collection as "probably *B. melanocarpa* Sond. & F. Muell." (*Woolls, NSW 15342*). Elliot and Jones (1982) referred to it as an unnamed species with affinities to *B. melanocarpa*. Although the voucher specimens have been destroyed by insects (R. C. Carolin, pers. comm. 1984) it is evident from the general description, chromosome number determination and cited distribution that Smith-White *et al.* (1970) also knew this taxon. They referred to it as species no. 5 of the superspecies *basaltica*. (The superspecies concept is that proposed by Davis in 1948).

*B. formosa* has also been recognized as a distinct taxon in the nursery trade, being sold in the eastern states of Australia as 'Pilliga Posy' and in Western Australia as 'Tinker Bell' (Anon. 1985). Neither name has been officially registered with the Australian Cultivar Registration Authority (G. Butler, in litt. 1985).

*B. formosa* is readily distinguished from *B. melanocarpa*. Unlike *B. formosa*, *B. melanocarpa* is an erect, branching herb with an indumentum of glandular and septate hairs. The leaves are commonly cuneate and the fruit is black and lacks the well-defined but narrow wing of *B. formosa*. Smith-White *et al.* (1970) recorded a haploid chromosome number of  $n=6$  for *B. melanocarpa*. I have determined  $n=9$  for specimens of *B. formosa* from the type locality. It is clear that despite past suggestions to the contrary the two species are not closely related. *B. formosa* appears to have close affinities with another, apparently unnamed, taxon from eastern Victoria and southern New South Wales. Collections of this taxon (e.g. *Forbes 512*, *Walsh 1214*, *Walsh 1492* — all at MEL) are commonly and erroneously referred to *B. angustifolia* A. Cunn. var. *heterophylla* (Benth.) Davis and *B. petrophila* Davis.

Observations of low seed set in cultivated specimens suggest that this species is self-incompatible. That the species must or usually cross-pollinates is reflected by other attributes. Thus it is gynomonoecious, has large ray florets, produces an average of 3,840 pollen grains per disc floret and has a pollen/ovule ratio (P/O) of 3,033 (see table 1). The use of P/O values in determining plant breeding systems is well documented (e.g. Short 1981, Lawrence 1985). The P/O compares well with the values recorded by Lawrence (l.c.) for self-incompatible, gynomonoecious species of *Senecio*.

# SPECIMENS EXAMINED:

*New South Wales* — *Althofer 60*, Gulgong, -iii.1946 (NSW); *Short 3028*, 3.5 km NW. of Coonabarabran along road to Baradine, 1.xi.1986 (MEL); *Tindale & Ingram s.n.*, Bathurst-Grattai road, 18.x.1953 (NSW 25648); *Woolls s.n.*, summit of ranges near Mudgee, -ix.1872 (MEL 1553038); *Woolls s.n.*, Mudgee, s. dat. (NSW 15342); *Woolls s.n.*, top of high hills near Mudgee, s. dat. (MEL 1553039); *Woolls s.n.*, high mountains near Mudgee, s. dat. (MEL 1553040).

# *Brachyscome halophila* P.S. Short, sp. nov.

*Herba annua*, 10-33 cm alta, pilis sparsis. *Folia* basilaria et caulina, super alterna sed ad basem opposita, integra et linearia, c.1-4 cm longa, 0.1-0.2 cm lata, vel pinnatisecta, (1)2-8(c.12) cm longa, (0.5)1-4(4.2) cm lata, semper viridia, basibus decurrentibus, pilis septatis. *Capitula* solitaria, terminalia, heterogama, radiata. *Involucrum* c.7-8 mm diametro; bractee 8-14, imbricatae, ellipticae vel obovatae, 2.7-5.2 mm longae, 1.1-2.8 mm latae, herbaceae sed marginibus et apicibus scariosis. *Receptaculum* conicum, foevatum, glabrum. *Flosculi radii*

feminei, 9-13; corolla (5.1)7-10.5(11.2) mm longa, (1.6)2-3.8(4.1) mm lata, alba vel pallens malvina vel purpurea. *Flosculi disci* hermaphroditi, 40-118; corolla (1.7)2-2.8(3.2) mm longa, 0.6-1.2 mm diametro, lutea; antherae 5, 0.75-0.96 mm longae, connectivis truncatis. *Cypselae* homomorphae, 2-2.6 mm longae, tuberculatae, brunneolae; paginae laterales humeratae, per cristas duas; paginae abaxiales adaxialesque ala, integra vel 3-10 lobata, lobis pilis; carpodium carens. *Pappus* carens.

**HOLOTYPE:** *Conn 2160*, Western Australia. c. 9.6 km south of Three Springs on road to Carnamah. 29° 36' S., 115° 49' E.. Occurring on small sand ridge in middle of dry salt lake. Associated species include *Scaevola spinescens*, *Cassia eremophila* and *Bromus rubens*. 15.ix.1985 (MEL 1546972). **ISOTYPE:** AD, CANB, K, PERTH.

*Annual herb*, 10-33 cm high, sparsely hairy. *Leaves* basal and cauline, mainly alternate but the lowest ones opposite, entire and linear, c. 1-4 cm long, 0.1-0.2 cm wide, or pinnatisect, (1)2-8(c. 12) cm long, (0.5)1-4(4.2) cm wide, all leaves green, basally decurrent and with scattered septate hairs. *Capitula* solitary, terminal, heterogamous, radiate. *Involucre* c. 7-8 mm diam.; bracts 8-14, overlapping, elliptic or obovate, 2.7-5.2 mm long, 1.1-2.8 mm wide, mainly herbaceous but with scarious apices and margins. *Receptacle* conical, pitted, glabrous. *Ray florets* female, 9-13;

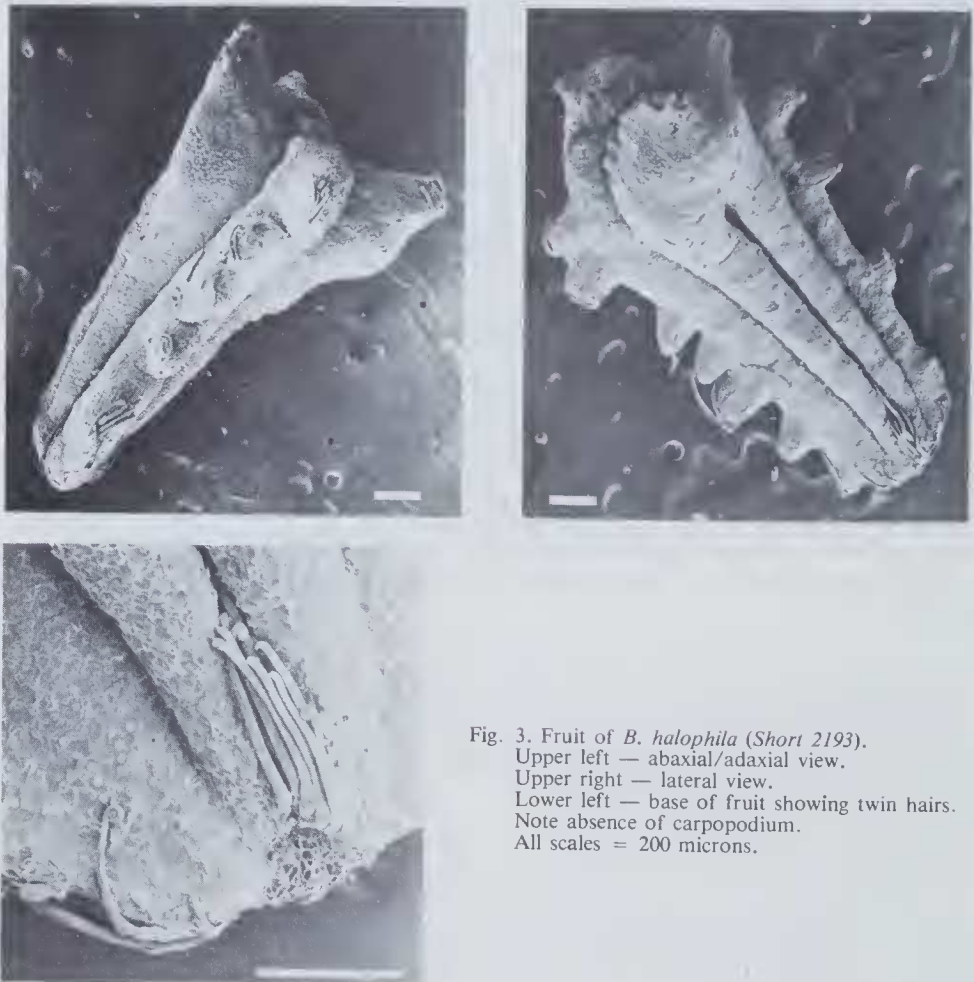


Fig. 3. Fruit of *B. halophila* (*Short 2193*).  
Upper left — abaxial/adaxial view.  
Upper right — lateral view.  
Lower left — base of fruit showing twin hairs.  
Note absence of carpodium.  
All scales = 200 microns.

corolla (5.1)7-10.5(11.2) mm long, (1.6)2-3.8(4.1) mm wide, white or pale mauve or purple except for white at base. *Disc florets* bisexual, 40-118, corolla (1.7)2-2.8(3.2) mm long, 0.6-1.2 mm diam., usually yellow but young florets sometimes tinged red; stamens 5; anthers 0.75-0.96 mm long, connective truncate, endothelial tissue radial; filament collar straight in outline and composed of uniform cells and basally not thicker than the filament. Style branches with the tips  $\pm$  lanceolate and papillate, the stigmatic papillae marginal and not reaching the apex. *Fruits* (*cypselas*) homomorphic, 2-2.6 mm long, minutely tuberculate, brown to brown-black; lateral surfaces with two ridges forming an apical shoulder; abaxial and adaxial surfaces of an entire or 3-10 lobed wing, the lobes with one to several curled, twin hairs; carpodium absent. *Pappus* absent. Figs 1, 3.

Chromosome number:  $n=9$  (*Short 2800*).

#### DISTRIBUTION:

Occurs in Western Australia between latitudes 28°-30° S. and longitudes 115°-116° E. Known only from the type locality and from c. 10 kilometres west of Pindar.

#### ECOLOGY:

*Brachyscome halophila* apparently grows exclusively on sand ridges in or on the edge of saline depressions. As well as the ecological information given for the holotype, collectors' notes include: "Growing amongst *Halosarcia* & *Maireana* on deep sand", "Very sandy loam amongst samphire & *Aizoon*" and "In sand amongst *Acacia* shrubs and *Stipa*".

#### NOTES

The collection *Short 2877*, from near Pindar, differs from typical *B. halophila* in floret colour. The ray florets are bright purple with white at the base and in young disc florets the lobes are often tinged red. Specimens from the type locality have only white to mauve ray florets and yellow disc florets. The phenotypic differences may be due to variation in environmental conditions. However *B. halophila* is apparently confined to the margins of salt lakes and as previously noted (*Short 1981, 1986*) the salt lakes of Western Australia have undoubtedly been reservoirs of speciation. This is a result of the physical isolation of populations in different lake systems and drainage divisions (*Bettenay & Mulcahy 1972; Mulcahy & Bettenay 1972*). The type locality of *B. halophila*, on the eastern edge of Yarra Yarra Lakes, is in the South West Drainage Division. Population *Short 2877* is approximately 120 kilometres further north and is in the Murchison Drainage Division. Hence it seems that the phenotypic differences observed between the populations of *B. halophila* may be genetically determined.

The chromosome number determination of  $n=9$  (*Short 2800*) for *B. halophila* is consistent with determinations for other species referred by *Davis (1948)* to subgenus '*Metabrachycome*'. *Carter (1978)*, in determining chromosome counts for 12 of the 17 species recognized in this group found that all had a base number of  $x=9$ .

Fruit morphology suggests that *B. halophila* has affinities with *B. cheilocarpa* *F. Muell.*, *B. ciliocarpa* *W. Fitzg.* and *B. oncocarpa* *Diels*, i.e. it is referable to the superspecies *ciliocarpa* recognized by *Davis (l.c.)*. (Examination of type specimens at MEL suggests that *B. ciliocarpa* and *B. oncocarpa* will prove to be conspecific).

The reference to the abaxial, adaxial and lateral surfaces of the fruit refers to the orientation of the fruit relative to the central axis of the receptacle. Hence the usually divided wings (deemed to be on the adaxial and abaxial surfaces of the fruit) point towards and away from the centre of the receptacle. The shoulders of the fruit (deemed to be on the lateral surfaces of the fruit) are more or less orientated parallel to the circumference of the receptacle.

Attributes pertaining to the reproductive biology of *B. halophila* are summarized in table 1. The species, like *B. formosa*, is gynomonoeious, has conspicuous ray florets and a high P/O ratio. The P/O value also compares well with those recorded by Lawrence (1985) for self-incompatible, gynomonoeious species of *Senecio* with showy ray florets. The higher P/O value in *B. halophila* compared to *B. formosa* is partly due to the production of slightly more pollen grains per floret but mainly reflects the fact that the average percentage of ray florets per capitulum is approximately half that found in *B. formosa*. The rhizomatous habit of *B. formosa* and hence its potential for asexual reproduction may also explain in part why the P/O value for that species is lower than in *B. halophila*. In terms of resource allocation it is also not surprising that it is the longer-lived perennial, not the annual, species which produces the most ray florets per capitulum.

Table 1. Attributes pertaining to the reproductive biology of *B. formosa* and *B. halophila*. Figures are based on *Short 2425* and *Conn 2160* respectively. Data is from fifteen individuals per population. P/Os and anther measurements have been determined following the methods outlined in Short (1981, 1985).

Character	<i>B. formosa</i>	<i>B. halophila</i>
Longevity	perennial (rhizomate)	annual
Total number of florets per capitulum	62-113 $\bar{x}$ = 78.9 S.D. = 14.2 S.E. = 3.67	53-129 $\bar{x}$ = 75.2 S.D. = 20.34 S.E. = 5.25
Number of ray florets per capitulum	19-34 $\bar{x}$ = 24.2 S.D. = 4.09 S.E. = 1.05	9-13 $\bar{x}$ = 11.2 S.D. = 1.32 S.E. = 0.34
Number of disc florets per capitulum	40-83 $\bar{x}$ = 56.6 S.D. = 11.8 S.E. = 3.06	40-118 $\bar{x}$ = 64 S.D. = 20.3 S.E. = 5.25
Average % of ray florets per capitulum	31	15.8
Length of ray florets (mm)	9.8-15.8 $\bar{x}$ = 12.08 S.D. = 1.45 S.E. = 0.37	5.1-11.2 $\bar{x}$ = 8.51 S.D. = 1.39 S.E. = 0.35
Length of anther (mm)	1.05-1.5 $\bar{x}$ = 1.3 S.D. = 0.12 S.E. = 0.031	0.75-0.98 $\bar{x}$ = 0.84 S.D. = 0.68 S.E. = 0.017
Length of microsporangia (mm)	0.8-1.2 $\bar{x}$ = 1.01 S.D. = 0.099 S.E. = 0.025	equivalent to anther length
Length of terminal anther appendage	0.25-0.4 $\bar{x}$ = 0.31 S.D. = 0.06 S.E. = 0.015	absent
Pollen grains per floret	2910-5250 $\bar{x}$ = 3840 S.D. = 656.9 S.E. = 169.6	2528-5988 $\bar{x}$ = 4193 S.D. = 1081.5 S.E. = 279.2
Pollen/ovule ratio	3033	3530



## SPECIMENS EXAMINED:

Western Australia — Chinnock 3718, 12.7 km from Carnamah on Three Springs road, 14.viii.1977 (AD, MEL); Short 2193, c. 13 km N. of Carnamah, 23.x.1983 (MEL); Short 2800, c. 10 km S. of Three Springs, 9.ix.1986 (AD, MEL, NSW, PERTH); Short 2877, c. 10 km W. of Pindar, 13.ix.1986 (AD, MEL, NSW, PERTH).

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